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1966 OPERATING SUMMARY

ORANGEVILLE

water pollution control plant

ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

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ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Orangeville Local Advisory Committee,
Town of Orangeville.

Gentlemen:

We are pleased to submit to you the 1966 Operating Summary for the
Orangeville Water Pollution Control Plant, OWRC Project No. 58-S-16.

It is hoped that our joint participation in efforts to combat water pollution
will have even more success in the coming year.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", is written over the typed name.

D. S. Caverly,
General Manager.



ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET
TORONTO 5

J. A. VANCE, LL.D.
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J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am happy to present you with the 1966 Operating Summary for the Orangeville Water Pollution Control Plant, OWRC Project No. 58-S-16.

The report offers a concise summary of operating data for the year and comparisons with previous years where these are applicable and significant.

Yours very truly,

A handwritten signature in dark ink, appearing to read "B. C. Palmer".

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary contains complete information on the management of the project during 1966. It contains a concise review of the year's plant operation, significant financial details, and a visual presentation in graphs and charts of technical performance.

The information will be of value to interested parties in assessing the adequacy of the project at this time and its ability to meet future requirements.

The report is the result of co-operation by several groups within the Division of Plant Operations. These include the statistics section and the technical publications section. The Division of Finance and the draughting section of the Division of Sanitary Engineering were also closely associated with its publication.

The Regional Operations Engineer, however, has had the primary responsibility for the content, and will be happy to answer any questions regarding it.

C O N T E N T S

Foreword	1
Title Page	3
'66 Review	5
Project Costs	6
Operating Costs	7
Process Data	10
Conclusions	Inside back cover

ORANGEVILLE
water pollution control plant

operated for

THE TOWN OF ORANGEVILLE

by the

ONTARIO WATER RESOURCES COMMISSION

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DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director: C. W. Perry
Regional Supervisor: A. C. Beattie
Operations Engineer: A. Clark

801 Bay Street Toronto 5

'66 REVIEW

Although the plant is well run the quality of the final effluent was poor. The average final effluent was 58 ppm BOD and 62 ppm suspended solids. Commission objectives are 15 ppm BOD and 15 ppm suspended solids.

Grit in the raw sewage caused problems with the raw sewage pumps. New impellers will be purchased in 1967.

The plant is operated eight hours per day, five days per week, with part-time supervision on weekends.

During the year there were routine visits by the Operations Engineer and his assistant. There was one visit by the Safety Officer, and the maintenance section made two inspections. There were no recorded visits by the special services section.

PROJECT COSTS

NET CAPITAL COST (Estimated)	
Long Term Debt to OWRC	<u>\$176,332.46</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1966	\$ <u>27,823.83</u>
Net Operating	\$ 14,956.60
Debt Retirement	3,558.00
Reserve	941.67
Interest Charged	9,780.24
TOTAL	\$ <u>28,236.51</u>

RESERVE ACCOUNT

Balance at January 1, 1966	\$ 6,413.46
Deposited by Municipality	941.67
Interest Earned	<u>375.09</u>
	\$ 7,730.22
Less Expenditures	
	-
Balance at December 31, 1966	\$ <u>7,730.22</u>

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY
JAN	492.32	451.65				40.67			
FEB	913.99	363.76	24.18	144.49	139.05	4.75			237.76
MARCH	1095.39	380.16	27.26	109.16		22.35	190.13		366.33
APRIL	1582.52	704.06	25.41	134.14	419.85	4.40	6.83		287.83
MAY	1529.08	434.41	26.95	105.90	141.75	52.33	156.30	71.07	540.37
JUNE	1439.94	479.51	20.17	135.74	141.75	38.19	190.59	145.20	288.79
JULY	1439.19	402.84		101.86	141.75	47.34		19.22	722.18
AUG	959.89	402.84		122.46	313.95	2.60		102.24	15.80
SEPT	1451.26	639.64		106.32	50.74	11.03			643.53
OCT	1267.32	444.98		119.11	199.42	41.65			462.16
NOV	1152.93	402.84	26.71	93.24	283.50	54.25		13.20	279.19
DEC	1636.77	402.84	47.49	278.57	283.50	5.73		9.21	609.43
TOTAL	14956.60	5509.53	98.17	1450.99	2115.26	325.29	543.85	360.14	4453.37

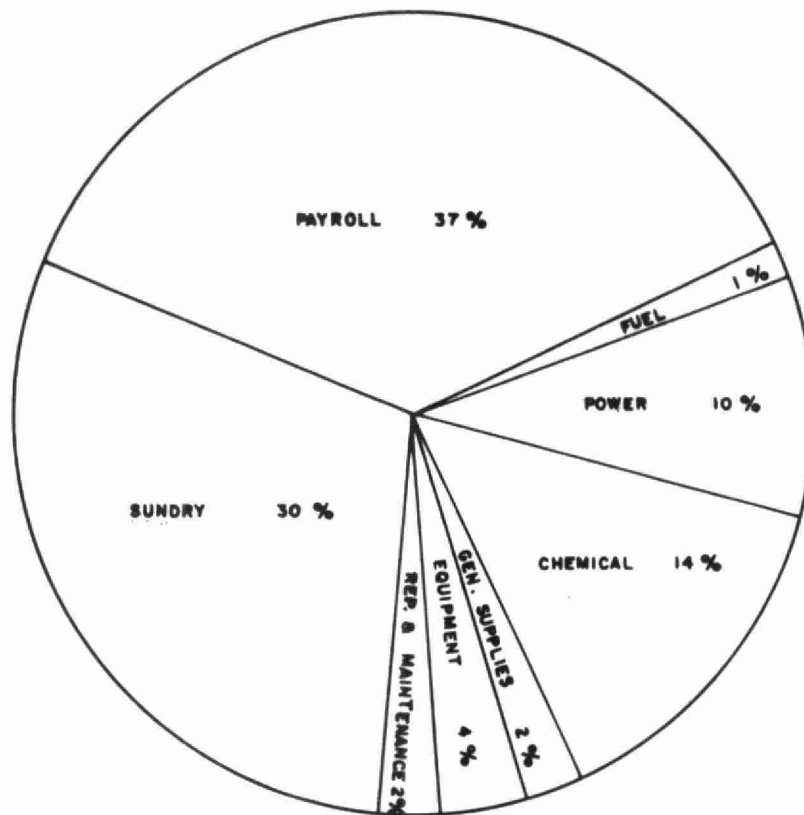
* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$4,000.00
BRACKETS INDICATE CREDIT

YEARLY OPERATING COSTS

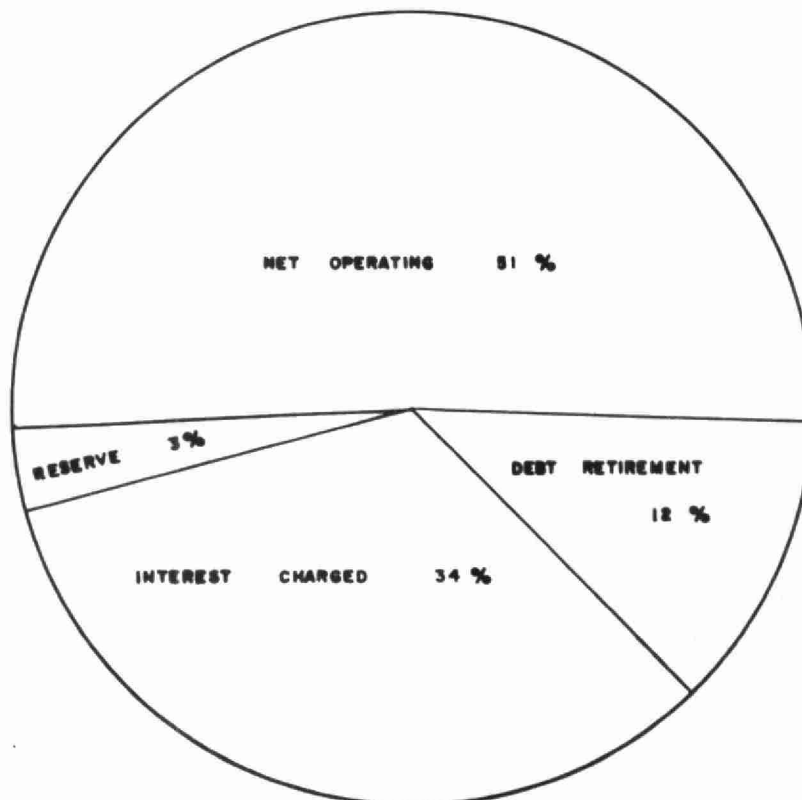
YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
			*		
1961	168,643	\$ 12992.61	\$ 10.92	\$ 77.00	
1962	161,630	\$ 10616.07	\$ 8.81	\$ 65.80	4 CENTS
1963	161,545	\$ 13347.87	\$ 10.53	\$ 82.60	7 CENTS
1964	187,373	\$ 13000.89	\$ 9.94	\$ 69.38	8 CENTS
1965	215,853	\$ 13525.19	\$ 10.34	\$ 62.66	6 CENTS
1966	209,502	\$ 14956.60	\$ 10.76	\$ 71.39	7 CENTS

* BASED ON ANNUAL POPULATION ESTIMATE AND 3.9 PERSONS PER FAMILY

1966 OPERATING COSTS



TOTAL ANNUAL COST



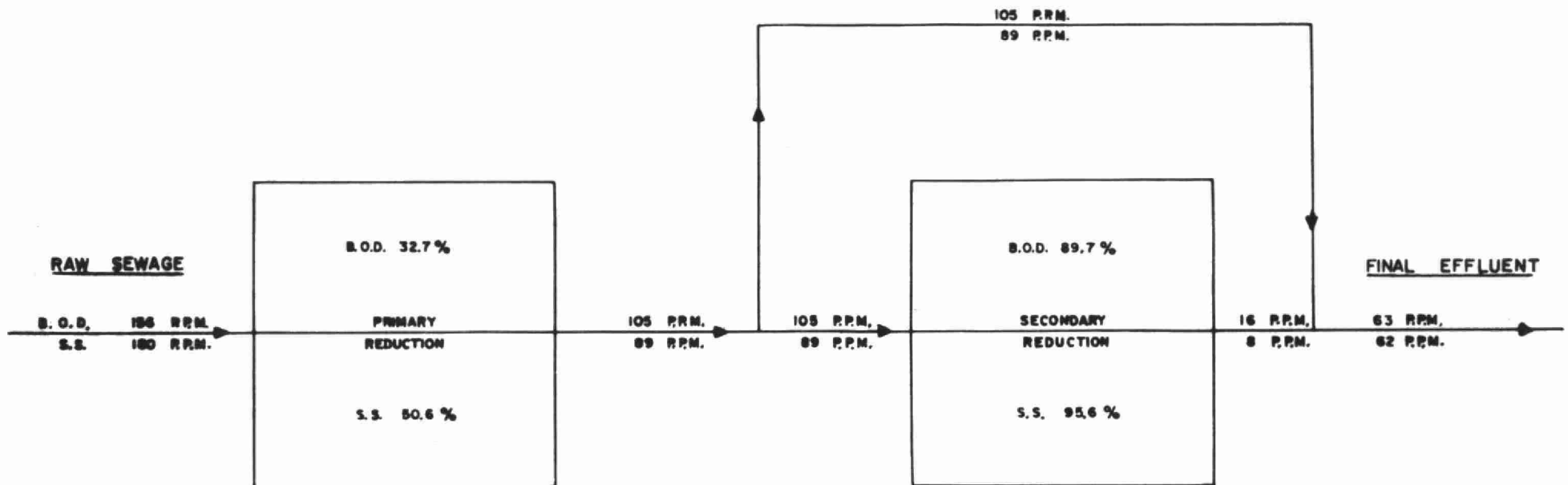
Process Data

The average flow for 1966 was 0.576 mgd, a reduction of 2.8% from that of 1965. For all practical purposes the flow remained unchanged in 1966.

Since only 0.16 mgd received full treatment the average BOD and SS in the final effluent was 63.0 and 62.0 ppm respectively. OWRC objectives are 15 ppm BOD and 15 ppm SS.

A plant enlargement is to be constructed in the near future.

ORANGEVILLE W.P.C.P.
SCHEMATIC SKETCH SHOWING EFFICIENCIES
OBTAINED BY PRIMARY & SECONDARY UNITS

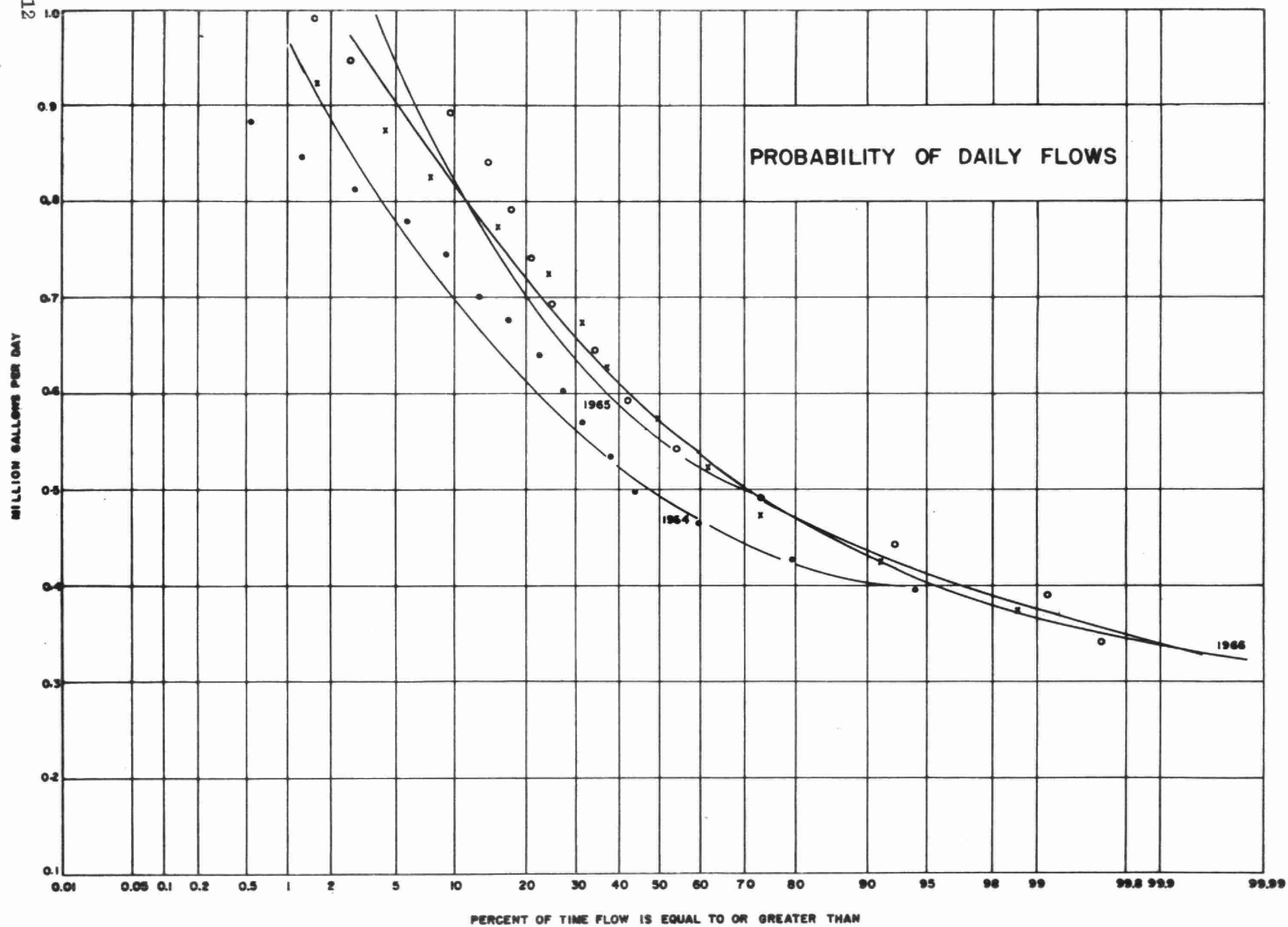


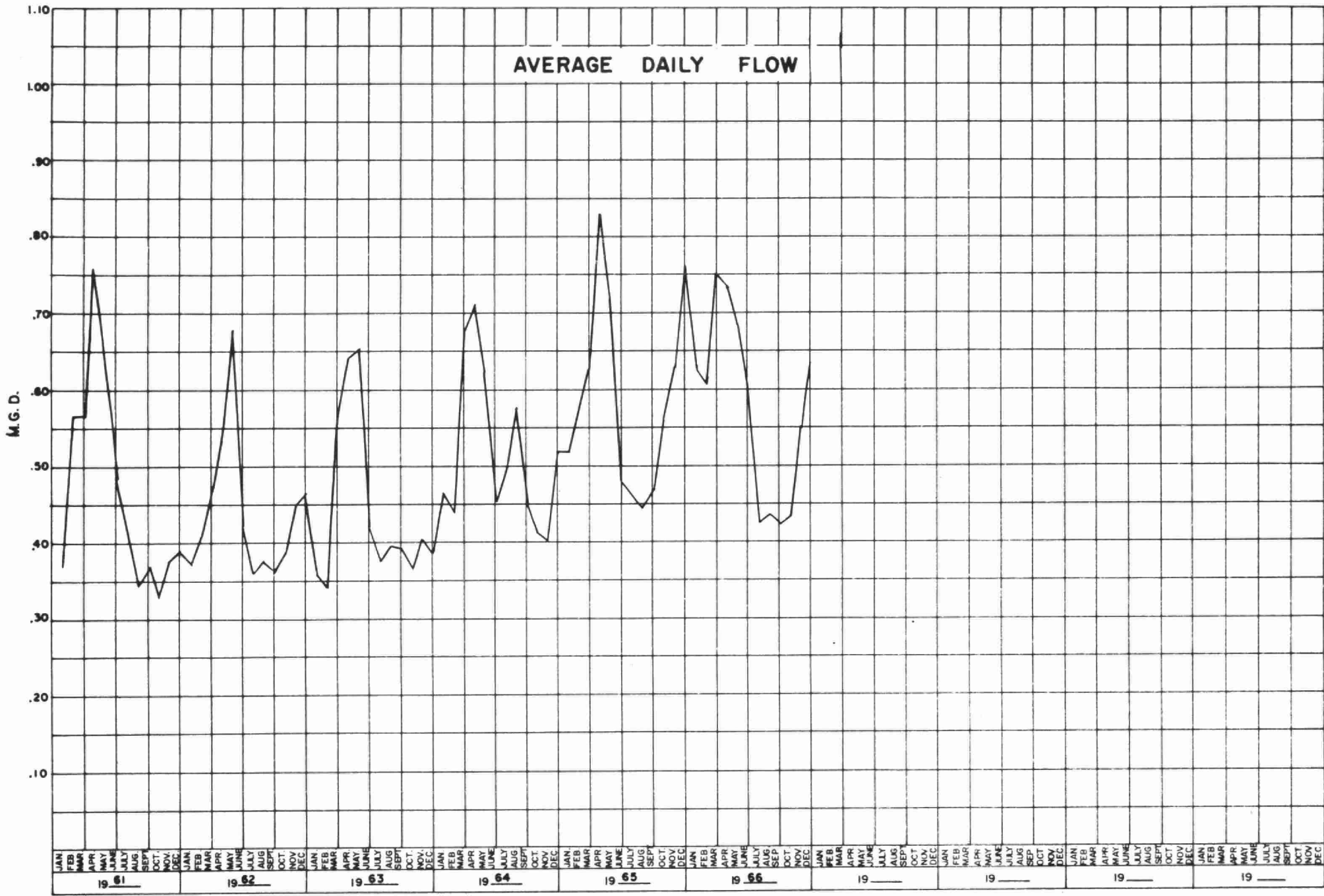
NOTE: OVERALL PLANT EFFICIENCY

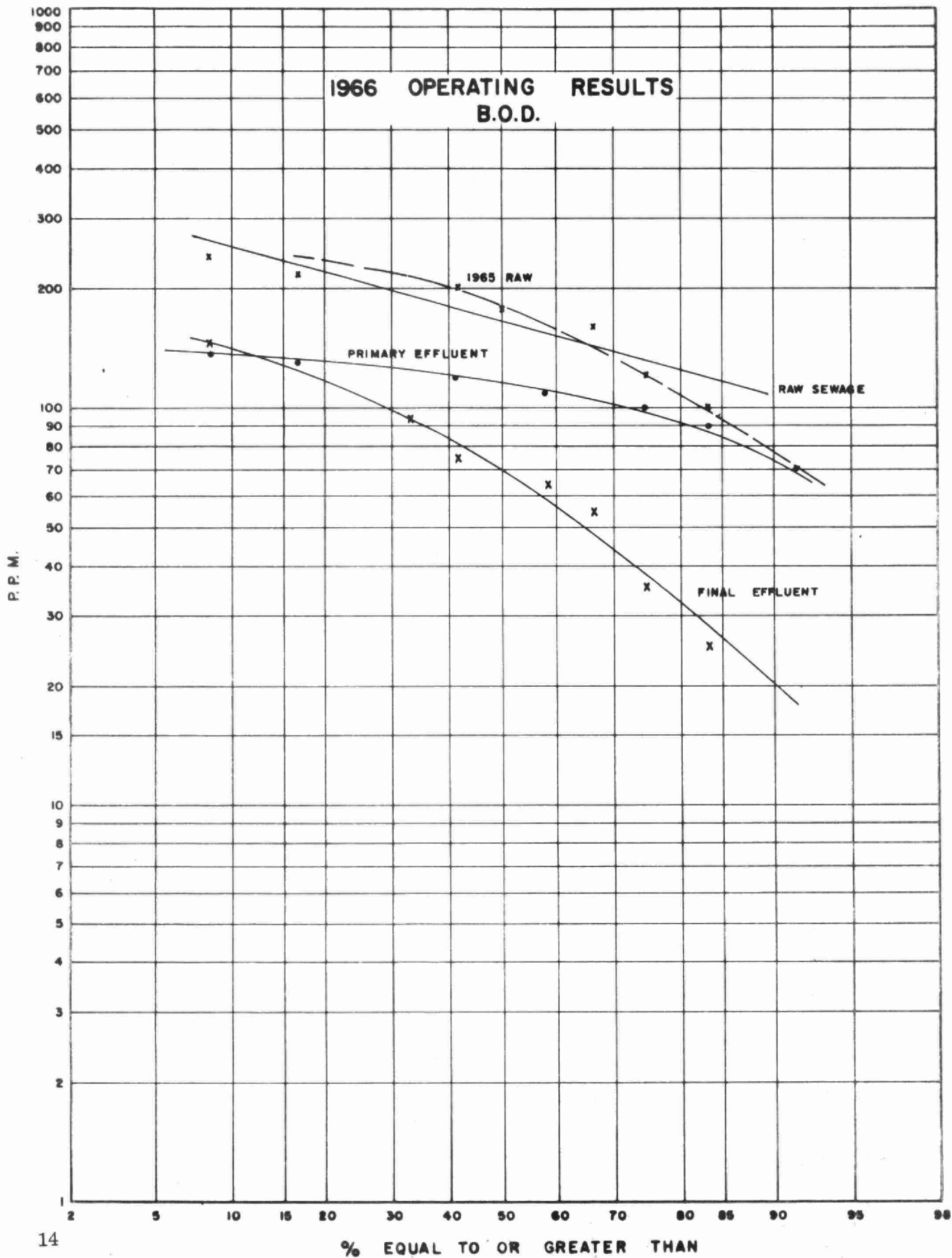
B.O.D. = 63.0 %
S.S. = 65.5 %

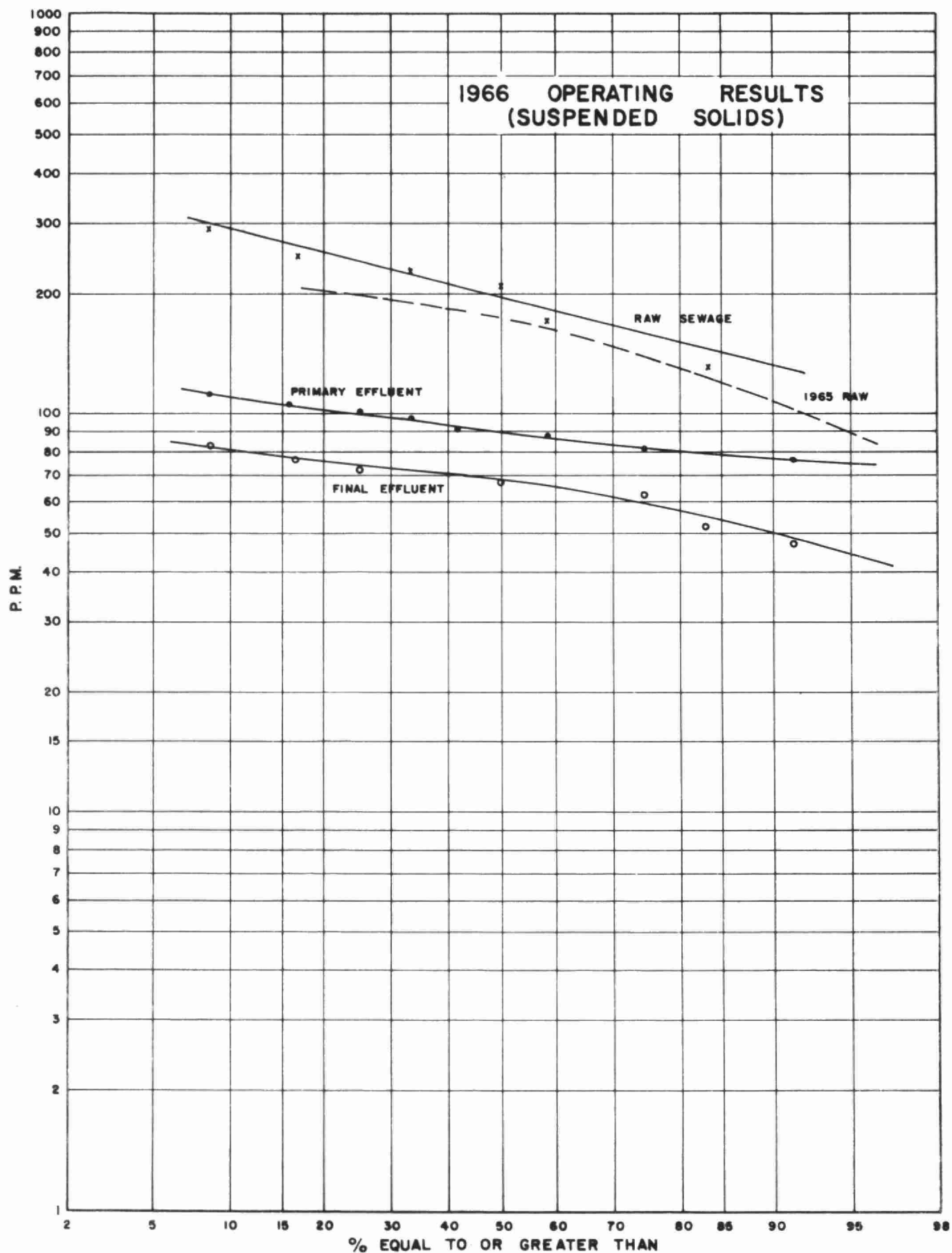
ABOVE LOADINGS BASED ON AVERAGE OF SAMPLE RESULTS FOR 1966

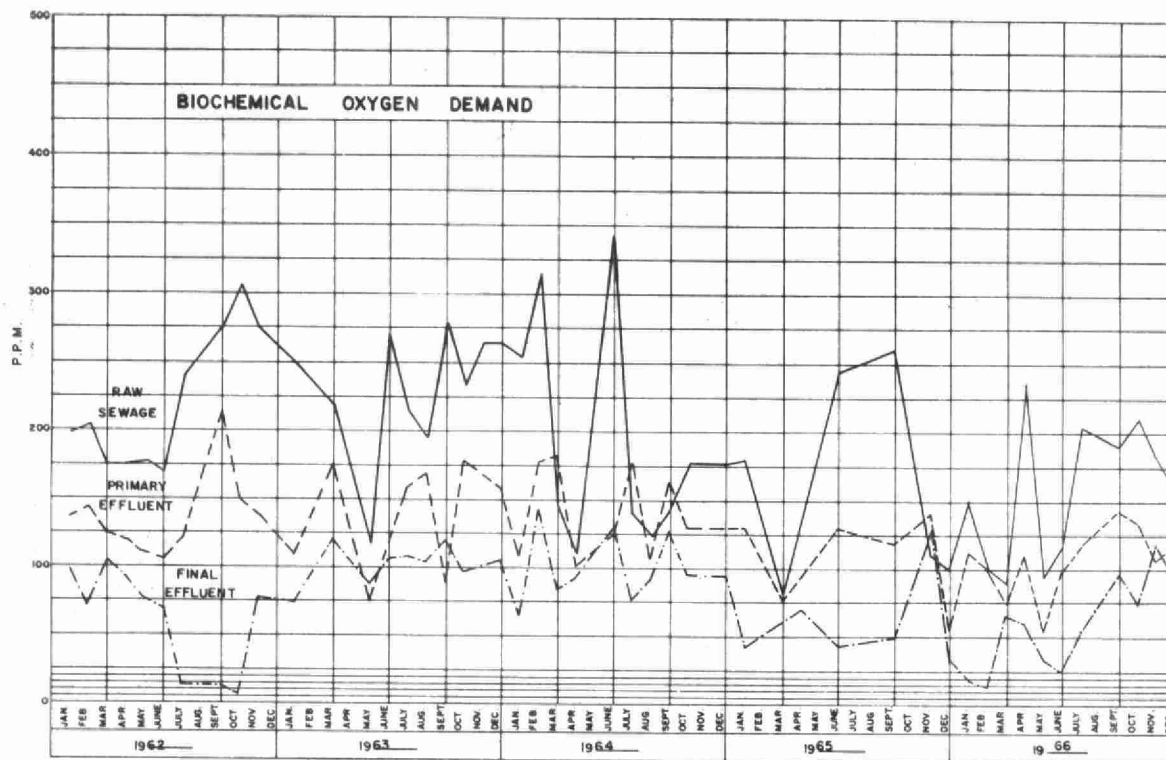
B.O.D. - RAW SEWAGE 186 P.P.M.
S.S. - RAW SEWAGE 180 P.P.M.



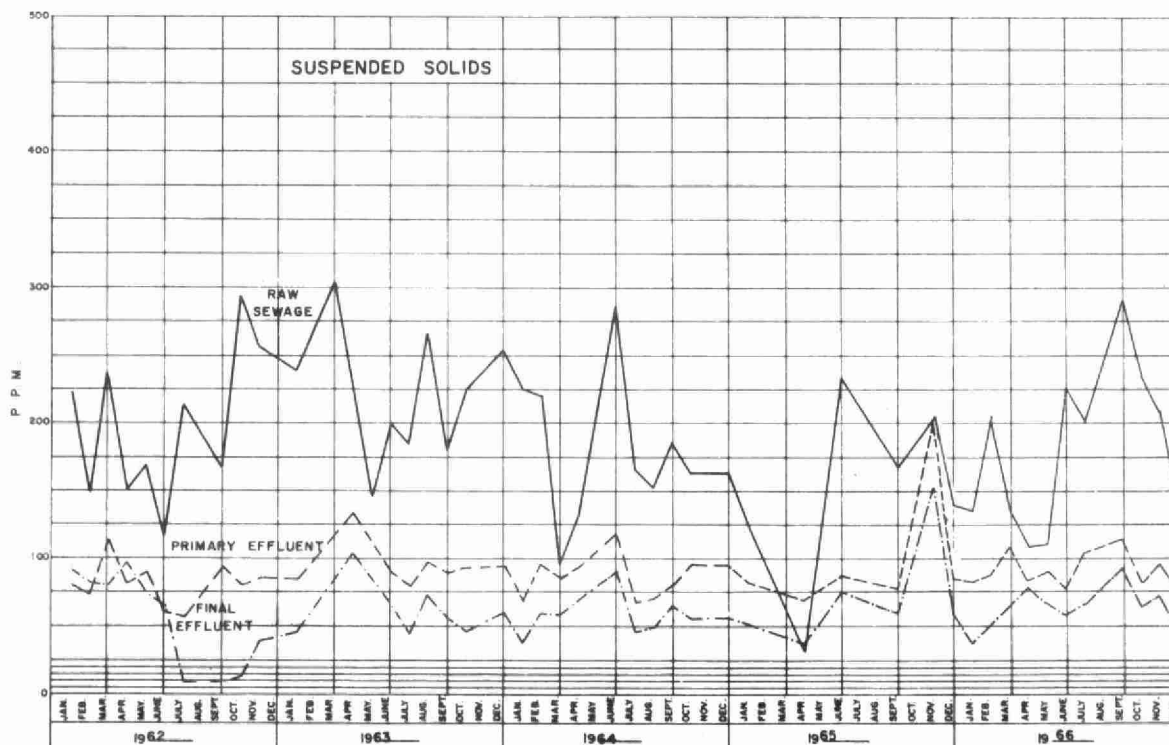








MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	
JAN.	150	17	88.5	13.0	134	36	73.0	9.6	56
FEB.	100	11	89.0	7.5	204	50	75.5	13.0	-
MAR.	88	65	26.0	2.7	136	63	53.5	8.6	-
APR.	240	60	75.0	19.9	108	78	28.0	3.3	48
MAY	80	31	61.5	5.2	109	67	38.5	4.4	64
JUNE	114	24	79.0	7.9	226	63	72.0	14.2	240
JULY	205	54	73.5	9.9	200	65	67.5	8.8	176
AUG.	156	58	63.0	6.6	180	62	65.5	8.0	60
SEPT.	190	96	49.5	6.0	294	82	72.0	13.5	36
OCT.	210	72	65.5	9.2	234	63	73.0	11.4	8
NOV.	180	117	35.0	5.2	206	70	66.0	11.2	44
DEC.	156	90	42.5	6.5	134	45	66.5	8.8	28
TOTAL	-	-	-	102.6	-	-	-	123.6	760
AVG.	156	58	63.0	8.6	180	62	65.5	10.3	63

COMMENTS

The percent removal of BOD and SS is 63% and 65.5% respectively. This is about half way between the results obtained from primary treatment and complete treatment. The use of the old undersized aeration section accounts for this.

The amount of grit removed was slightly reduced from 78 cubic feet per month in 1965 to 63 cubic feet per month in 1966.

AERATION SECTION

MONTH	PRIM. EFFL B.O.D. PPM.	ML.SS. PPM.	LBS BOD. PER 100 LBS. M L. S. S.	CUBIC FEET AIR PER LB. B.O.D. REMOVED
JANUARY	110	1613	14	1748
FEBRUARY	100	1620	13	2195
MARCH	74	1168	13	2093
APRIL	108	1276	18	1748
MAY	54	1268	9	3600
JUNE	98	1260	17	2022
JULY	116	1265	34	-
AUGUST	-	1260	-	-
SEPTEMBER	142	1244	24	1500
OCTOBER	134	1392	20	1666
NOVEMBER	105	1297	17	2686
DECEMBER	118	1351	19	1747
TOTAL	-	-	-	-
AVERAGE	105	1334	18	2100

COMMENTS

Approximately 33% of total flow is treated in the aeration section.

DIGESTER OPERATION

Month	Sludge to Digesters 1000's cu. ft.	Sludge from Digesters 1000's cu. ft.
January	8.94	-
February	8.08	5.16
March	8.94	7.74
April	8.08	4.05
May	8.94	3.68
June	8.68	3.68
July	8.08	5.16
August	8.94	4.79
September	8.27	10.32
October	8.94	3.68
November	8.65	3.68
December	8.94	3.68
Total	103.48	55.62
Average	8.62	4.46

COMMENTS

The digester is unheated and roofless. It is used as a thickening tank and as such, it is effective, giving a 46% reduction in solids volume.

The thickened sludge is removed by liquid tank truck.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	19.491	1126	5.78
FEBRUARY	16.943	970	5.71
MARCH	23.441	1026	4.38
APRIL	22.145	1049	4.74
MAY	21.092	993	4.71
JUNE	17.488	1003	5.74
JULY	13.109	1082	8.25
AUGUST	13.504	1138	8.43
SEPTEMBER	12.763	1056	8.27
OCTOBER	13.364	1055	7.89
NOVEMBER	16.422	1157	7.04
DECEMBER	19.740	1212	6.14
TOTAL	209.502	12867	-
AVERAGE	17.458	1072	6.14

COMMENTS

Due to the high concentration of BOD and SS in the plant effluent, it was dosed with chlorine at an average rate of 6.14 ppm.

This enabled the effluent to comply with the OWRC objective of maintaining a chlorine residual of 0.5 ppm after 15 minutes' contact.

The bacteria count in the effluent was reduced to minute numbers.

